ZUUM MEDIA®

Model: HE2

Pro SERIES

HDMI over Two CAT5/6 Extender

User Manual

(HE2-TX Front/Back)

(HE2-RX Front/Back)

Full HD 1080 · HDMI · HDCP · 3D Compliant · x.v.Color · 7.1 CH AUDIO · RoHS Compliance · FC · CE

Made in Taiwan
ZM 071612

SAFETY AND NOTICE

The **HE2 HDMI over Two CAT5/6 Extender** has been tested for conformity to safety regulations, requirements, and has been certified for international use. However, like all electronic equipment, the HE2 should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation, air circulation, and do not use near water.
- Keep objects that might damage the device away and assure that the placement of this unit is on a stable surface.
- Use only the power adapter, power cords, and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

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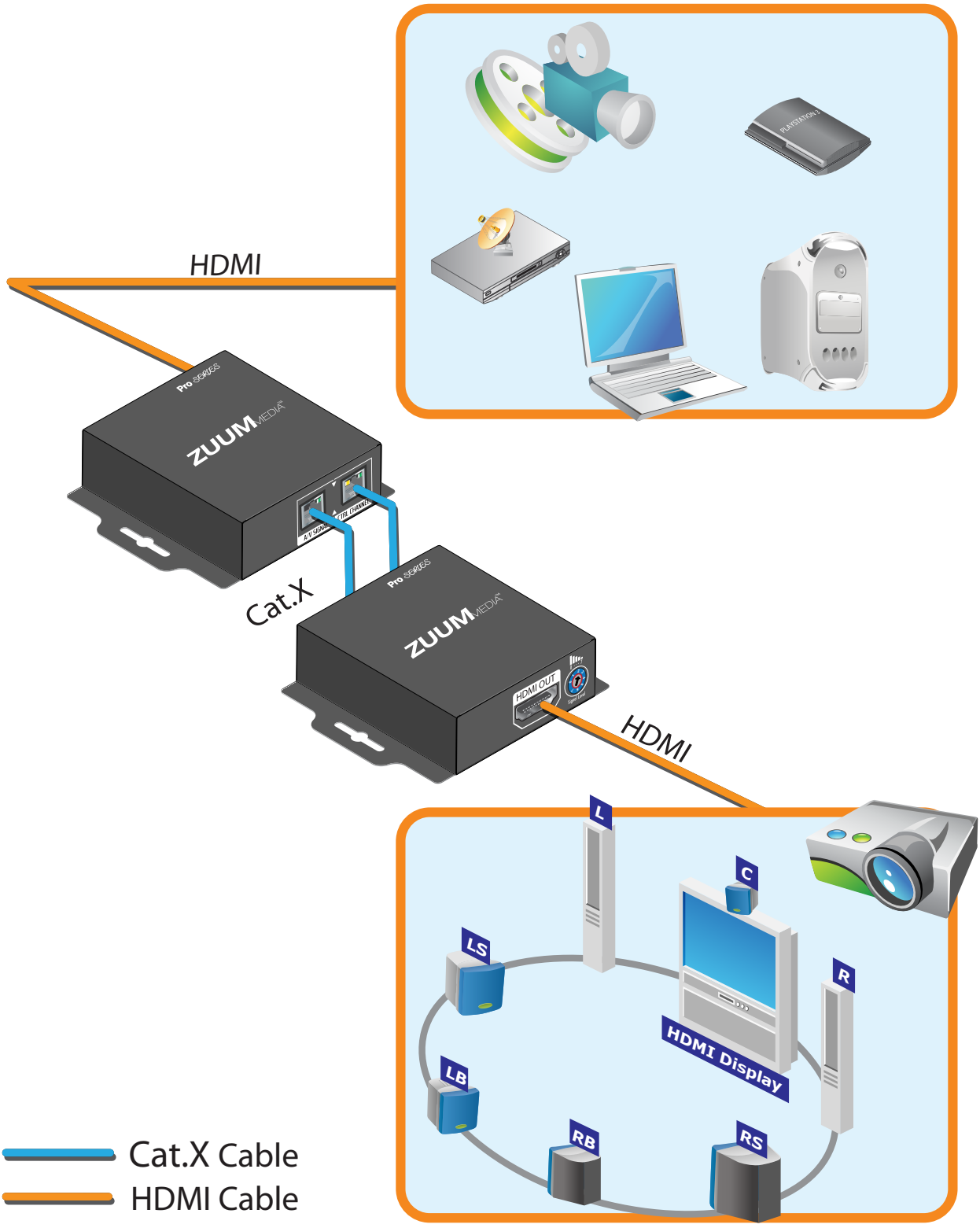
INTRODUCTION

The **HE2 HDMI over Two CAT5/6 Extender** is 3D compatible, and boosts up your HDMI transmission distance up to 60m (200ft) in HDTV 720p / 1080i format. With two low cost Cat5/6 cables, users can easily extend HDMI/DVI signals from Blu-ray/DVD players, PS3/ PC's, and any other TMDS compliant devices to distant Plasma/LCD TV sets, PC monitors, or projectors. This cost effective solution makes HDCP compliant DVD players or other HDMI Sources transmit high quality video and audio at a greater distance, when integrating several components apart.

The HE2 includes two units: HE2 transmitter and HE2 receiver unit. The transmitter unit is used to transfer HDMI or DVI signal input over two low cost Cat-5/6 cables. The receiving unit is responsible for equalizing transferred TMDS multimedia data. The transmission distance between the sending and receiving units can be up to 60m (200ft) under HD (720p/1080i) or up to 40m (130ft) under Full HD resolution (1080p). With an 8-level equalization rotary control knob on the receiver unit, users can adjust the equalization strength from the transmitter accordingly, and therefore optimize the transmission distance between source and destination.

APPLICATION



SPECIFICATIONS & PACKAGE CONTENTS

Model Name		**HE2**	
Technical		HE2-TX	HE2-RX
Role of usage		Transmitter [TX]	Receiver [RX]
HDMI compliance		Yes	
HDCP compliance		Yes	
Video bandwidth		Single-link 225MHz [6.75Gbps]	
Video support		480i / 480p / 720p / 1080i / 1080p60 up to 12-bit	
HDMI over UTP transmission [8-bit]		Full HD (1080p)-40m (130ft) [CAT5e] / 50m (165ft) [CAT6] HD (720p/1080i)-50m (165ft) [CAT5e] / 60m (200ft) [CAT6]	
Audio support		Surround sound (up to 7.1ch) or stereo digital audio	
Equalization		8-level digital control at RX	
Input TMDS signal		1.2 Volts [peak-to-peak]	
Input DDC signal		5 Volts [peak-to-peak, TTL]	
ESD protection		[1] Human body model — ±19kV [air-gap discharge] & ±12kV [contact discharge] [2] Core chipset — ±8kV	
PCB stack-up		4-layer board [impedance control — differential 100Ω; single 50Ω]	
Input		1x HDMI	2x RJ-45
Output		2 x RJ-45 + 1x2.1mm	1x HDMI
HDMI source control		No	
IR remote control		N/A	
HDMI connector		Type A [19-pin female]	
RJ45 connector		WE/SS 8P8C with 2 LED indicators	
3.5mm connector		None	
Rotary switch		None	Signal level EQ
Mechanical		HE2	
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	[TX/RX] — 85 x 60 x 25mm [3.3” x 2.4” x 1”]	
	Package	270 x 175 x 80mm [10.6” x 6.9” x 3.1”]	
Weight	Model	315g [11oz]	
	Package	685g [1.5 lbs]	
Power supply		5V 4A DC	
Power consumption		1 Watt [max]	
Operation temperature		0~40°C [32~104°F]	
Storage temperature		-20~60°C [-4~140°F]	
Relative humidity		20~90% RH [no condensation]	
Package Contents		1x HE2 [TX & RX] 1x 5V power supply unit 1x User manual	

FEATURES

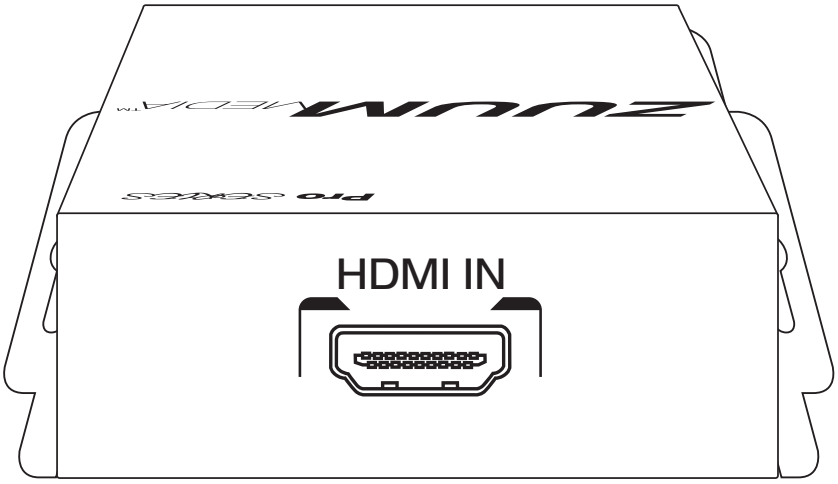
- Full HD and 3D compliant
- Extends the transmission distance up to 60m (200ft) from the sources under 1080i or 720p (CAT6 cable recommended for best performance)
- Extends the transmission distance up to 40m (130ft) from the sources under 1080p (CAT6 cable recommended for best performance)
- Provides independent DDC channel, fully HDCP compliant
- Minimizes the cable skew by adjustable 8-level equalization control
- Pure unaltered uncompressed 7.1ch digital HDMI audio over CAT-5/6 cables
- Perfectly integrated with other HDMI over CAT-5/6 series products

The length depends on the characteristics and quality of the cables. Higher resolutions and longer transmission distances require low skew cables (<25ns/100m) for best performance. Unshielded CAT6 with metal RJ45 connectors is recommended.

PANEL DESCRIPTIONS

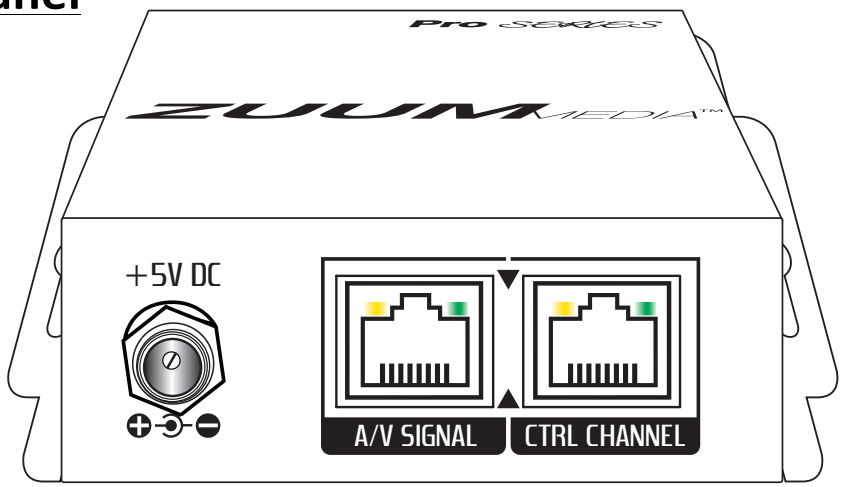
HE2-TX (Transmitter)

Input Panel



HDMI IN: Connect to a HDMI source with a HDMI male-male cable here.

Output Panel



A/V SIGNAL: Connect to the **A/V SIGNAL** port on the receiving unit with a Cat-5/6 cable.

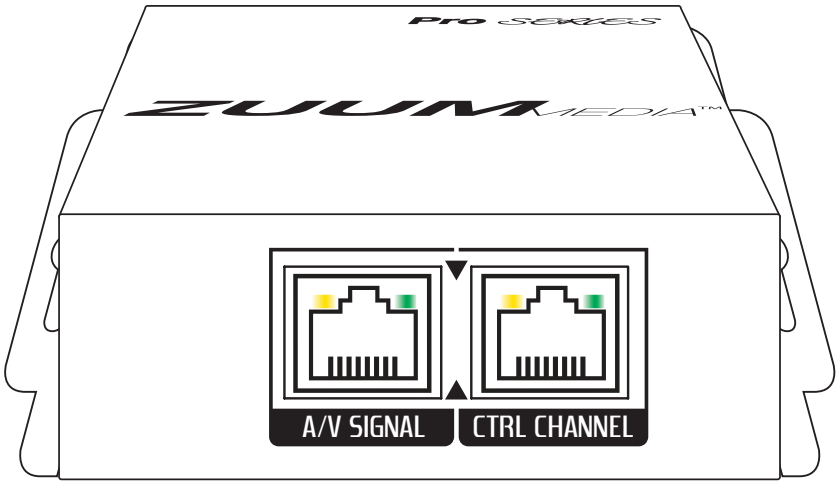
CTRL CHANNEL: Connect to the **CTRL CHANNEL** port on the receiving unit with a Cat-5/6 cable.

+5V DC: Connect to a 5V DC power supply unit.

Note: In limited space applications a special USB Power cable can be used (Sold Separately). **Model: 2USB135L** will pull USB Power from USB on TV or source components instead of using enclosed power supply. This cable can also help with some electrical interference, the types that can cause HDMI sync loss.

HE2-RX (Receiver)

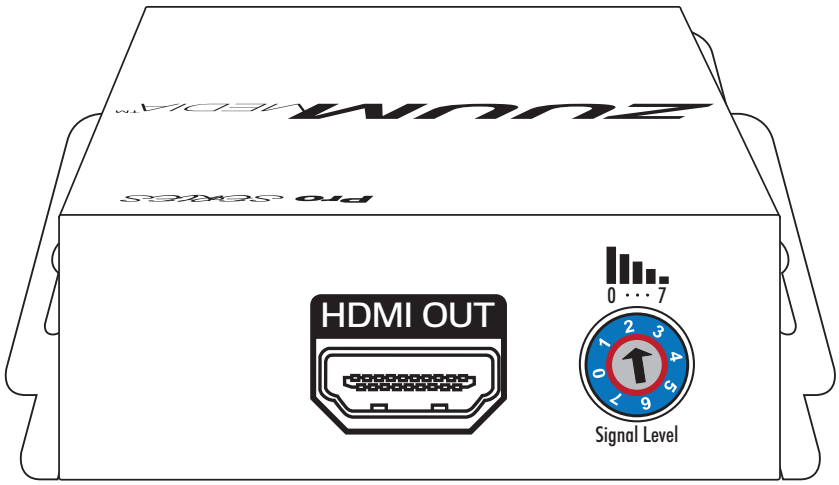
Input Panel



A/V SIGNAL: Connect to the **A/V SIGNAL** port on the transmitting unit with a Cat-5/6 cable.

CTRL CHANNEL: Connect to the **CTRL CHANNEL** port on the transmitting unit with a Cat-5/6 cable.

Output Panel



HDMI OUT: Connect to a HDMI display with a HDMI male-male cable here.

Signal Level: Adjust the 8-level signal equalization control to the received HDMI signals. The HDMI signal level varies from 0 (strongest) to 7 (weakest) for respective transmission length from longest to shortest distance. Dial the Signal Level from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issues that would shorten the product's life significantly!

HARDWARE INSTALLATION

1. Connect your HDMI/DVI source (such as a Blu-ray Disc player) to the transmitting unit HE2-TX.
2. Connect your HDMI/DVI display (such as a LCD TV) to the receiving unit HE2-RX.
3. Connect two Cat-5/6 cables between the transmitting and receiving units via **A/V SIGNAL** and **CTRL CHANNEL** ports respectively.
4. Make sure your Cat-5/6 cables are tightly connected and not loose. (CAT 6 Recommended)
5. Plug in 5V DC power supply unit to the power jack of the transmitting unit HE2-TX, or use USB Power Cable. **Model: 2USB135L (Sold Separately)**
6. If you see flickering or blinking image on the display, adjust the rotary control signal level on the receiving unit to improve the cable skew. 0 stands for the strongest HDMI signal level for longest possible transmission length while 7 stands for the weakest HDMI signal level for shortest transmission length. Try adjusting the signal level from 7 to 0 to find the optimal setting for the HDMI over CAT5/6 transmission.

NOTICE

1. Adjust the 8-level signal equalization control to the received HDMI signals. Dial the **Signal Level** from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issues that would shorten the product's life significantly!
2. If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI or HDMI EDID information.
3. All HDMI over CAT5 transmission distances are measured using Belden CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C.
4. The transmission length is largely affected by the type of Cat-5/6 cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid UTP cables (usually in the form of 1000ft bulk cables) can transmit a lot longer signals than stranded UTP cables (usually in the form of fixed length patch cords). Shielded STP cables are better suited than unshielded UTP cables. A solid UTP Cat-5e cable shows longer transmission range than stranded STP Cat-6 cable. For long extension applications, solid UTP/STP cables are the only viable choice.
5. EIA/TIA-568-B termination (T568B) for category cables is recommended for better performance.
6. To reduce the interference among the unshielded twisted pairs of wires in UTP cable, one can use shielded STP cables to improve EMI problems, which is worse in long transmission.
7. Because the quality of the Cat-5/6 cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of Cat-5/6 cables. For desired resolutions greater than 1080i or 1280x1024, a Cat-6 cable is recommended.
8. If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input [HDMI input #1] generally can produce better transmission performance among all HDMI inputs.

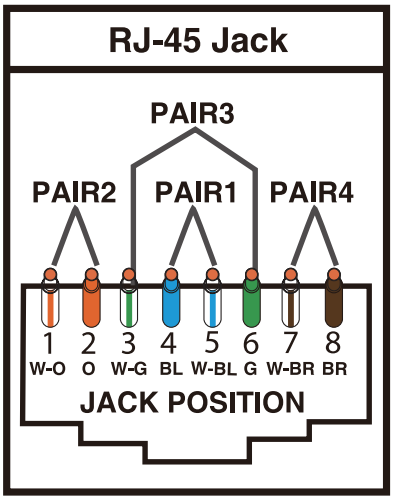
Performance Guide for HDMI over CAT5/6 Cable Transmission

Performance rating		**Type of CAT5/6 cable**		
Wiring	**Shielding**	**CAT5**	**CAT5e**	**CAT6**
Solid	Unshielded (UTP)	★★★	★★★★	★★★★★
	Shielded (STP)	★★★	★★★	★★★★
Stranded	Unshielded (UTP)	★	★★	★★
	Shielded (STP)	★	★	★★
Termination		Please use **EIA/TIA-568-B** termination (**T568B**) at any time		

RJ-45 DIAGRAMS

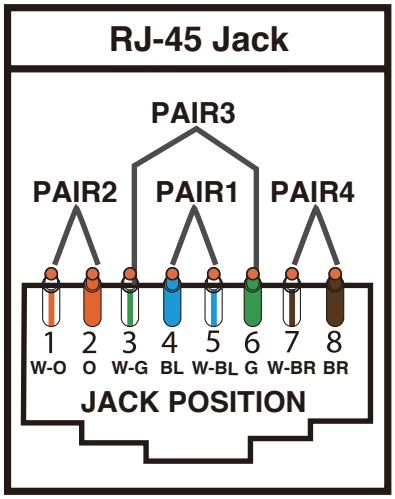
Audio/Video Signal Port

Data Link TIA/EIA-568-B		
PIN	Color	Function
1	W-O	TX0-
2	O	TX0+
3	W-G	TX1-
4	BL	TX2-
5	W-BL	TX2+
6	G	TX1+
7	W-BR	TXC-
8	BR	TXC+



Control Channel Port

Data Link TIA/EIA-568-B		
PIN	Color	Function
1	W-O	Hot Plug Detect
2	O	CEC
3	W-G	DDC SCL
4	BL	DDC SDA
5	W-BL	GND
6	G	GND
7	W-BR	Power
8	BR	Reserved



Do You Need Technical Support?

ZuumMedia is proud to offer free technical support to ensure your product is operating correctly.

If you are experiencing difficulties setting up this product, please call us for assistance 1-888-861-7351 or visit www.zuummedia.com for more information.

Here for You 24/7

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